

# Notice of Allowability

Application No.

10/699,640

Examiner

Nancy Bitar

Applicant(s)

TSAI ET AL.

Art Unit

2624

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/27/2004.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

JOSEPH MANCUSO  
SUPERVISORY PATENT EXAMINER

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Eugene Mar on 01/19/2007. The application has been amended as follows:

The application has been amended as follows:

*(Currently Amended) Claim 1:*

A feature based data structure for computer manikin comprising:

a [A] multiple geodetic longitudinal feature lines including the main vertically directed feature lines, interpolating between any two neighboring main feature lines;

the multiple geodetic longitudinal feature lines ~~[The main longitudinal feature lines containing [at least] containing [one or more of]~~ the front centerline, left front princess line, left sideline, left back princess line, back centerline, right back princess line, right side line, and the right front princess line;

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[The] the multiple geodetic latitudinal feature lines including the main horizontally directed girth lines, interpolating between any two neighboring main girth lines;

and [The] main latitudinal feature lines [~~at least~~] containing [~~one or more of the~~] shoulder-neck line, armpit girth line, bust line, under-bust line, waistline, spinal-waistline, high-hip line, hip line, and the crotch girth line.

*(Currently Amended) Claim 2:*

2. The feature based data structure for computer manikin as claimed in claim 1, wherein the data structures of latitudinal feature [~~girth~~] lines have eighty [~~multiple~~] points within which eight longitudinal feature line pass through; [~~which are divided as left and right symmetric parts from the centerlines. The eight main longitudinal lines pass through the girth lines at the #0, #10, #20, #30, #40, #50, #60, and #70 points.]~~

[The] and the other points on the girth line are obtained by interpolating the polar angles from the left or right centroid to the neighboring feature points.

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*(Currently Amended) Claim 3:*

3. The feature based data structure for computer manikin as claimed in claim 1, wherein the front and back centerlines are fitted by vertical curves to the points obtained from zero-crossing points of ~~[the]~~ a torso image by applying Sobel masks twice on the torso image.

*(Currently Amended) Claim 4:*

4. The feature based data structure for computer manikin as claimed in claim 1, wherein the four princess lines and the data structure contain two sections; ~~[ ]~~

~~[The]~~ the upper section is sliced from the body data points by a plane passing through the mid-shoulder point, the bust point, and the blade point~~[.]~~;

~~[The]~~ the lower section is from the bust ~~[blade]~~ point to the leg ~~[front]~~ back center point ~~[ ]~~ ,

~~[The]~~ the other structure points between these two ~~[levels]~~ sections are obtained from slicing the body by a plane through the two points and the centroid of the ~~[bust]~~ girth line.

*(Currently Amended) Claim 5:*

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5. The feature based data structure for computer manikin as claimed in claim 1, wherein the two sidelines stop at the armpit ~~[levels]~~ girth lines; ~~[.]~~

and the ~~[The sidelines are fitted by smooth curves to the points obtained from zero-crossing points of the torso image by applying Sobel masks twice on the torso. The]~~ data structure of the two sidelines has multiple points that are linear interpolated between the heights of two neighboring main girth lines from the crotch girth line ~~[level]~~ to the armpit girth line ~~[level]~~.

*(Currently Amended) Claim 6:*

6. The feature based data structure for computer manikin as claimed in claim 1, wherein the neck base girth line is fitted by a smooth curve passing through the front neck point, two side neck points, and the back neck point; ~~[.]~~

and the ~~[The]~~ data structure consists of multiple points that are interpolated according to the polar angles spanned by the centroid to the four feature points of the neck base girth line projecting on the horizontal plane.

*(Currently Amended) Claim 7:*

7. The feature based data structure for computer manikin as claimed in claim 1, wherein the left and right shoulder lines are

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fitted by smooth curves to the points of zero-crossing points in the shoulder image by applying Sobel masks twice; ~~[-]~~.

wherein the ~~[The]~~ starting points and half of the portion of the right and left shoulder lines are smoothly shifted to the side neck point; ~~[-]~~

and the ~~[The]~~ mid-shoulder point is set at the middle length of the shoulder line. ~~[ The data structure has multiple points from the side neck point to the shoulder point, they are obtained by linear interpolation of the total length.]~~

*(Currently Amended) Claim 8:*

8. The feature based data structure for computer manikin as claimed in claim 1, wherein the two neighboring main girth lines are armscye girth lines and ~~[two armscye girth lines]~~ are sliced from the shoulder scanned data set by a plane passing through the shoulder points, front break points, and back break points; ~~[-]~~

and the ~~[The]~~ data structure has multiple points interpolated the polar angles spanning by the centroid of armhole from shoulder point to the front break point, then to the back break point, and back to the shoulder point; ~~[.]~~ and the

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~~[The]~~ side line meets the armscye girth line at the middle of the bottom level; the widest level of the armhole is found, and set at the 48.sup.th girth level that separates the armhole into upper part and lower part. ~~[Below the 48.sup.th girth, the armscye girth line structure points are the terminate points of longitudinal lines from #16 to #24 in the left, and from #56 to #64 in the right. The upper structure points (from #48 to #53 girths) of the armscye girth line are the last six points of the longitudinal lines of #15, #65 (in the front) and #25, #55 (in the back).]~~

*(Currently Amended) Claim 9:*

9. The feature based data structure for computer manikin as claimed in claim 1, wherein the bust line is obtained by a plane that slices the body data set; wherein the ~~[The]~~ plane is perpendicular to the frontal plane and passes through two points, one at the left, and the other on the right, each having the maximum x-coordinate value on the front torso image.

*(Currently Amended) Claim 10:*

10. The feature based data structure for computer manikin as claimed in claim 1, wherein the under-bust line is a plane slices the body data set through the two points each having the maximum bending value on the front left and right princess lines below the bust girth line and above waist girth line, ~~N~~ including the ~~[ The ]~~ segmentation plane that is ~~[also]~~ perpendicular to the frontal plane.

*(Original) Claim 11:*

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11. The feature based data structure for computer manikin as claimed in claim 1, wherein the positions of hip and the waist are decided by the horizontal histogram of the torso image whose gray values are at the maximum and minimum values, respectively.

*(Currently Amended) Claim 12:*

12. The feature based data structure for computer manikin as claimed in claim 1, wherein the spinal-waistline is found by a plane that slices the body data set horizontally through a point having the maximum bending value on the back centerline between the bust and crotch girth lines ~~{levels}~~.

*(Currently Amended) Claim 13:*

13. The feature based data structure for computer manikin as claimed in claim 1, wherein the high-hip line is found by a plane that slices the body data set horizontally through a point having the maximum x-coordinates and is the zero-crossing point by applying Sobel masks twice on the of the front centerline between the bust and the crotch girth lines ~~{levels}~~.

*(Original) Claim 14:*

14. The feature based data structure for computer manikin as claimed in claim 1, wherein the crotch line is found by a plane that slices the body data set horizontally through the crotch point.

*(Currently Amended) Claim 15:*



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5. The feature based data structure for computer manikin as claimed in claim 1, wherein the data structure of computer manikin for garment design recodes only left half part of the manikin; and obtaining ~~[The]~~ data points ~~[are obtained]~~ by computing the gray scale histograms of left and right body images individually, selecting the larger one, and if the right side is select, mirroring it to the left. ~~[It has forty-one longitudinal lines including the #0, #10, #20, #30, and #40 main feature lines.]~~——

### REASONS FOR ALLOWANCE

#### Claims 1-15 are allowed

2. The following is an examiner's statement of reasons for allowance: there is no teaching of constructing the manikin from the scanned data of common 3D body scanner where the manikin provides an infrastructure of building an automatic anthropometric system so that it can be used in garment design, medical and ergonomic researches, and movie amusement industry thus helping in finding body features and constructing computer manikin for various 3D body scanner.

The closest prior art on file is Chen, J.C." Points generating on the indicated segmentation plane from 3D scanner cloudy points", technical report, virtual reality and multimedia Lab, Department of mechanical engineering, National Cheng Kung University, Taiwan, 2001/11) that teaches a plane passing through feature points will meet the body a smooth curve and a plane through some points on the set generally will neither meet another point nor a curve.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

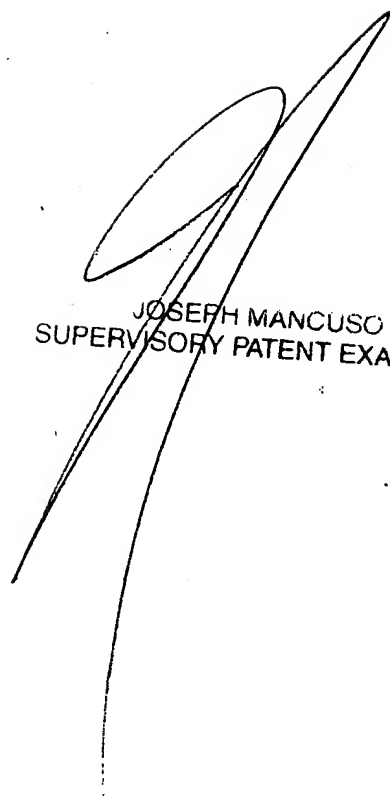
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 571-270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nancy Bitar

01/18/2007



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SUPERVISORY PATENT EXAMINER